

SSM/I Global Hydrological Products (Ralph.R.Ferraro@noaa.gov)

1) Basic Description of Data Set(s). This must provide a detailed description of the data sets that will be produced by this ARC component. The description must include:

- A- Monthly mean rainfall (85 GHz primary algorithm; 37 GHz secondary algorithm), rain frequency (85 GHz primary algorithm; 37 GHz secondary algorithm), total precipitable water, cloud liquid water, cloud frequency, snow cover frequency, sea-ice concentration and sampling frequency. Additionally, pentad rainfall and rain frequency are produced.
- B- Satellite (SSM/I F8, F11 and F13).
- C- Global (90N-90S)
- D- Monthly 1 degree and 2.5 degree grid (pentad rainfall at 2.5 degree)
- E- July 1987 to present.
- F- Monthly update (typically by fifth day of following month).
- G- Data available on NCDC web site (which links to NESDIS/ORA data server): <http://lwf.ncdc.noaa.gov/oa/satellite/ssmi/ssmipproducts.html>. Imagery of some of the recent few years of products and their anomalies can be found at http://cics.umd.edu/~rferraro/SSMI_Climate.html.
- H- Precipitation data are used to make final GPCP estimates for GEWEX. Pentad rainfall is used by NCPE/CPC CMAP pentad data set. Many of the data sets are used by NCEP/CPC in their “Climate Diagnostics Bulletin” and by JMA in a similar publication. A host of other users from academia.

2) Scientific Stewardship Activities Required for Continued Production of the Climate-Quality Data Set

- A- The process in generating these data sets has been virtually unchanged for the past several years; as such, the quality assurance procedures are well established and continue in the same manner. This includes manual inspection of the daily SSM/I input data fields (i.e., inspection of GIF images by David Forsyth and Wanchun Chen) (and a request for regeneration if there is missing data), inspection of monthly product images and anomaly fields (by Ralph Ferraro and Arief Sudradjat), etc. Any suspected data are quickly scrutinized and the suspected data fields regenerated. We will be adding in a new data format this year for the DMSP F16 SSMIS (which replaces the SSM/I), so new decoders are being developed. Also, in order to improve and modernize the processing, steps are

- underway to streamline and further automate the processing by porting the wide array of software (FORTRAN, IDL and GRADS) and platforms (Windows, UNIX, LINUX) to a newly purchased LINUX box. (more details provided in item 3 below).
- B- Precipitation validation activities by the GPCP Surface Reference Data Center provide feedback for the resulting microwave-derived precipitation estimates. Time series analysis and comparisons with other data sets are performed within the scope of this project by Ferraro and Sudradjat. However, new analysis procedures would require external support and a proposal has been submitted to C²D² in the FY05 call for proposals.
 - C- There are no plans to reprocess the data at the current time due to lack of funds. It would be desirable to reprocess these data using the fullest spatial resolution (currently, we are working off a 1/3 degree gridded array of 1 K accuracy), most recent calibration and updated algorithms. Again, some of this could be undertaken if our new proposal is funded.
 - D- This has been mostly described in item A. In addition, we will be participating in a precipitation assessment for eventual delivery to IPCC.

3) Transition of ARC Project to Operational Center

Outline pathway for eventual transition of your operational process to an established NOAA operational Center using the four steps outlined below.

Steps.

1. The products are already being generated at NESDIS in a routing manner by the Office of Research and Applications, with several components being handled through automated processes (e.g., FTP, cron jobs, etc.). We have already established a web site and archive at NCDC for the SSM/I products and that model will be followed for the AMSU products eventually. This effectively accomplishes steps 1 & 2.
3. As was previously described, the SSM/I product generation process, initially developed as part of a research program, comprises of several steps involving multiple languages and systems. What needs to happen next is for the software to be ported to a common system (e.g., a LINUX box), fully automated and properly documented. This process has already been initiated and we plan on completing this during 2005. This process will also include a parallel product generation with the current system to insure that they produce the same results. Ultimately, the system should then be handed off to either NESDIS/OSDPD or NESDIS/NCDC, but will require additional funds for those centers. The AMSU swath products are already operational and so only the climate portion of the system needs to be made operational. The most logical place for this to take place would be within OSDPD since they maintain the swath product generation already. Resources

would need to be identified for the transition of the climate portion of this system. Also, resources are needed to reprocess the products using the current suite of algorithms.

4. If successful, the systems then become operational within OSDPD or NCDC and we will continue to provide Scientific Data Stewardship oversight as needed. If the systems are designed with the proper web-based interfaces and comparison tools, this can be handled fairly easily. In addition to routine stewardship, we will need to address specific user concerns, typically, questions regarding the performance and usefulness of the products over certain geographical regions where questions typically arise.